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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,819	02/09/2004	Ronald Neil Drake		9231

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HELENA, MT 59602-9420

EXAMINER

SAVAGE, MATTHEW O

ART UNIT	PAPER NUMBER
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1724

MAIL DATE	DELIVERY MODE
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09/25/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/774,819

Applicant(s)

DRAKE, RONALD NEIL

Examiner

Matthew O. Savage

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40, 42-45, 47, 49-79, 82, 84-86, 88 and 90-103 is/are pending in the application.
- 4a) Of the above claim(s) 21-36, 47, 49-77 and 88-103 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-40, 42-45, 78, 79, 82, and 84-86 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 37-40, 42-45, 78, 79, 82, and 84-86 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a process for removing sodium and calcium ions from sodic water with a cationic exchange resin that adsorbs calcium ions more strongly than sodium ions, does not reasonably provide enablement for removing any type of contaminant from water with any type of purifying material as recited in the instant claims. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 42 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 42 is considered indefinite since it depends from a canceled claim.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 37-40, 42-45, 78, 79, 82, and 84-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunz in view of the "Encyclopedia of Separation Technology", volume 2, pages 1074-1077.

With respect to claim 37, Kunz discloses receiving contaminated water (e.g., via pipe 6), removing monovalent components (e.g., sodium) from the contaminated water with a purifying material to generate treated water (e.g., the cation exchange material contained in chambers 10 and 12), the treated water containing multivalent components (e.g., calcium and magnesium), the purifying material attracting both monovalent and multivalent components (see lines 48-51 of col. 3), controlling an amount of time the purifying material and contaminated water are mixed together (e.g., with adjustable plates 20, 21, 43, and 44), and separating the purifying material from the treated water (e.g., via gravity at a top of chambers 10 and 12). Kunz fails to specify controlling an amount of time the purifying material and contaminated water are mixed together to allow preferential removal of the monovalent components. The Encyclopedia of Separation Technology teaches that the contact time must be increased as the concentration of the ionic constituent to be removed increases. It would have been obvious to have modified the process of Kunz so as to have included the step of controlling an amount of time the purifying material and contaminated water are mixed

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together to allow preferential removal of the monovalent components in order to maximize sodium ion removal and minimize calcium ion removal since the Encyclopedia of Separation Technology teaches that the contact time must be increased as the concentration of the ionic constituent to be removed increases.

Concerning claim 38, Kunz discloses removing additional monovalent components before removing the multivalent components from the contaminated water (e.g., via line 23).

Regarding claim 39, Kunz discloses removing undesirable components from the contaminated water while transporting the contaminated water and the purifying material to a separator (e.g., formed by a top of chambers 10 and 12).

As to claim 40, Kunz discloses transporting the contaminated water including substantially continuous movement of the contaminated water and the purifying material to the separator (see the drawing).

Regarding claim 42, Kunz discloses the rate of the transporting the purifying material as being controlled by valve 20 or 21. Kunz fails to specify a rotary valve, however, substituting one known valve for another would have been obvious absent any showing of any unexpected result.

As to claim 43, Kunz discloses removing undesirable components from the contaminated water is carried out in a reaction volume 10, the reaction volume including a volume of a fluidized bed reactor.

Regarding claim 44, Kunz discloses reducing a contact time between the purifying material and the desirable components by adjusting the reaction volume (e.g., when initially building the contact chamber).

Concerning claim 45, Kunz discloses the purifying material as including an ion exchange media (see the abstract).

With respect to claim 78, Kunz discloses a method for purifying contaminated water including receiving the contaminated water (e.g., via inlet line 6), mixing the contaminated water with a purifying material (e.g., with a cation exchange resin in chamber 10), the purifying material being adapted to combine with monovalent components (e.g., sodium ions) from the contaminated water so as to generate treated water, cocurrently transporting both the purifying material and the contaminated water to a separator while the purifying material combines with the monovalent components (e.g., in any of chambers 10-13), controlling a duration of contact between the contaminated water and the purifying material (e.g., with valves 20, 21, 43, and 44) so as to selectively remove the monovalent components from the contaminated water, and, and separating the purifying material from the treated water (e.g., via gravity at a top of chambers 10 and 12). Kunz fails to specify controlling a duration of contact between the contaminated water and the purifying material to selectively remove the monovalent components from the contaminated water. The Encyclopedia of Separation Technology teaches that the contact time must be increased as the concentration of the ionic constituent to be removed increases. It would have been obvious to have modified the process of Kunz so as to have included the step of controlling a duration of contact

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between the contaminated water and the purifying material to selectively remove the monovalent components from the contaminated water in order to maximize sodium ion removal and minimize calcium ion removal since the Encyclopedia of Separation Technology teaches that the contact time must be increased as the concentration of the ionic constituent to be removed increases.

Concerning claim 79, Kunz discloses removing additional monovalent components before removing the undesirable components from the contaminated water (e.g., via line 23).

As to claim 82, the Encyclopedia suggests separating the purifying material while it is partially loaded since it teaches that leakage can occur if the purifying material is allowed to become fully loaded.

As to claim 84, Kunz discloses mixing the contaminated water with the purifying material in a reaction volume 10, 12 of a fluidized bed reactor.

Regarding claim 85, Kunz discloses reducing a contact time between the purifying material and the desirable components by adjusting the reaction volume (e.g., when initially building the exchange column 1).

Concerning claim 86, Kunz discloses the purifying material as including an ion exchange media (see the abstract).

Applicant's arguments filed 7-10-07 have been fully considered but they are not persuasive.

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Applicant's argument that Kunz fails to disclose exchange material that is cocurrently transported with raw water is not agreed with since a function occurs in any of chambers 10-13 of the Kunz apparatus.

Applicant' argues that Kunz fails to disclose teaching controlling the duration/time of contact between the media and raw water, however, Kunz suggests such a step by the inclusion of adjustable valves 20, 21, 43, and 44 that control the flow of purifying media through the exchange column.

Applicant's argument that Kunz fails to disclose the selective removal of monovalent components is noted, however, such a step is suggested by the Encyclopedia as explained in the above rejections.

Applicant's argument that modification of the Kunz apparatus as suggested in the office action would render the apparatus inoperative for its intended purpose of removing all of the ions from water is noted, however, removal of only one undesirable species over another is considered obvious in order to optimize the method for the production of water having a desired composition.

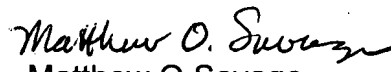
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew O. Savage whose telephone number is (571) 272-1146. The examiner can normally be reached on Monday-Friday, 7:00am-3:30pm.


Matthew O Savage
Primary Examiner
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mos